

**BIOLOGICAL SYSTEMS FOR MANUFACTURE OF
POLYHYDROXYALKANOATE POLYMERS
CONTAINING 4-HYDROXYACIDS**

Abstract

The gene encoding a 4-hydroxybutyryl-Co A transferase has been isolated from bacteria and integrated into the genome of bacteria also expressing a polyhydroxyalkanoate synthase, to yield an improved production process for 4HB-containing polyhydroxyalkanoates using transgenic organisms, including both bacteria and plants. The new pathways provide means for producing 4HB containing PHAs from cheap carbon sources such as sugars and fatty acids, in high yields, which are stable. Useful strains are obtaining by screening strains having integrated into their genomes a gene encoding a 4HB-CoA transferase and/or PHA synthase, for polymer production. Processes for polymer production use recombinant systems that can utilize cheap substrates. Systems are provided which can utilize amino acid degradation pathways, α -ketoglutarate, or succinate as substrate.